

MULTIPHASE FLOW

GeoEE 500

1. Uncontained Flows

- 1.1. Bubble Mechanics
- 1.2. Rayleigh-Taylor Instability

2. Porous-medium Flows

- 2.1. Immiscible Displacement – Definition of terms
- 2.2. Significance to Environmental Problems
- 2.3. Static Behavior
 - 2.3.1. Interfacial Relationships and Capillary Pressures
 - 2.3.1.1. Single Pore Models
 - 2.3.1.2. P_c - S_w Diagrams – Porous and Fractured Media
 - 2.3.1.3. Drainage and Imbibition
 - 2.3.1.4. Fingering
- 2.4. Mobile Behavior
 - 2.4.1. Equation of Motion
 - 2.4.2. Darcy's Law – Relative Permeabilities
 - 2.4.3. Multiphase Transport Equations
- 2.5. Behavior of LNAPLs
- 2.6. Behavior of DNAPLs
- 2.7. Unsaturated Flow – Vadose Zone
 - 2.7.1. Brooks-Corey (1966) Relations
 - 2.7.2. Van Genuchten (1980) Relations